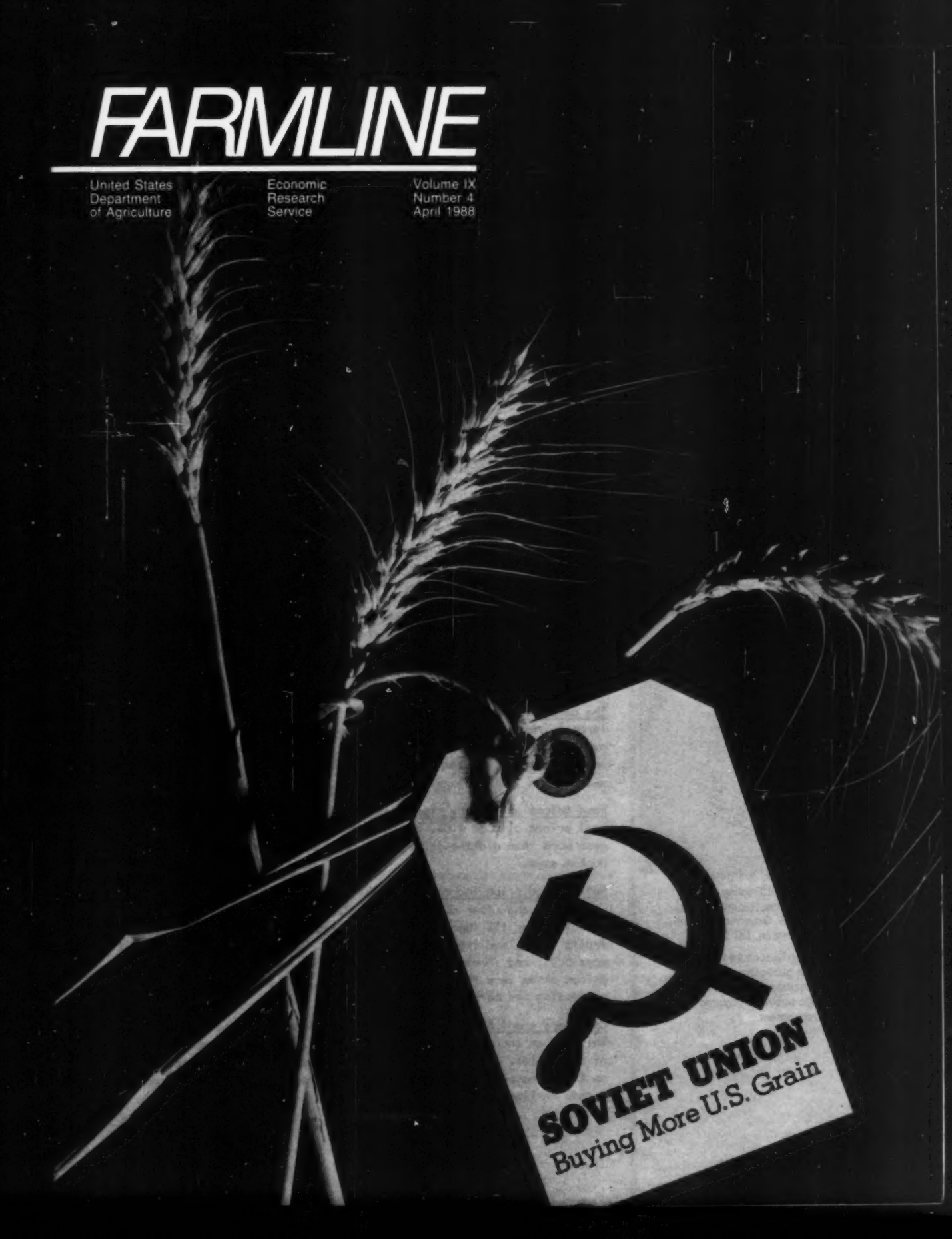
FARMLINE

United States Department of Agriculture

Economic Research Service

Volume IX
Number 4
April 1988



Editor
Jack Harrison

Editorial Assistant
Martha R. Evans

(202) 786-1494

Assistant editors: Doug Martinez, Juliana King, Judith Foulke.
Art director: Richard J. Barnes.

Contents of this magazine may be reprinted without permission.

FARMLINE is published 11 times a year by USDA's Economic Research Service. Send questions, requests, and editorial comments to *FARMLINE*, Room 228-USDA, 1301 New York Avenue NW, Washington, DC 20005-4789.

Subscription price is $11 to U.S. addresses ($13.75 foreign). Order from: USDA/ERS, P.O. Box 1608, Rockville, MD 20850. Ask for *FARMLINE* magazine and make your check or money order payable to USDA/ERS. Include your complete address, with ZIP code, and your daytime telephone number. Refunds cannot be issued. Foreign customers note: Only checks drawn on U.S. banks, cashier's checks, or international money orders can be accepted.

Please include your mailing label with change-of-address and other requests related to your subscription.

Subscriptions are also available from the U.S. Government Printing Office. For information, write: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

The Secretary of Agriculture has determined that publication of this periodical is necessary in the transaction of public business required by law of this Department.

PERSPECTIVES

THE FARM VALUE OF FOODS produced in the United States increased 2.7% during 1987, but retail food prices went up even more. The farm-to-retail price spread, which consists of processing and distributing costs, widened during the year. Those costs account for about 70 cents, and farm value about 30 cents, out of every food dollar spent at supermarkets.

Retail food prices, as measured by the consumer price index, are expected to rise 2% to 4% during 1988, according to economist Ralph Parlett of USDA's Economic Research Service. The increase should be less than last year, because of lower farm prices for some key commodities and little change in consumer demand.

During 1985 and 1986, there was an 8% decline in the farm value of foods, says Denis Dunham, another ERS economist. The 1987 gain in farm value was largely influenced by higher cattle prices, which brought producers about 7% more for red meats. The farm value of fresh vegetables was up 25% last year. Poultry and eggs were among several commodities with lower farm value in 1987. The farm value of poultry fell 19%, because of a 9% increase in production, Dunham says.

Among crop-based foods, the farm value of cereals and baked goods fell 9% in 1987, reflecting declines in the prices of wheat, corn, and rice. Farmers received only 3.3 cents for the wheat in a 55-cent, 1-pound loaf of bread. (The preceding year the share was 3.5 cents.) The farm value of fats and oils declined 4% in 1987, mainly because of lower prices for soybean oil.

The consumer price index of all foods was up 4.1% in 1987, for the largest increase since 1981. The annual increases have averaged nearly 5% over the last 28 years, but only about 3% the last 5 years. The largest increases since 1959 were 14.5% in 1973 and 14.4% in 1974. The smallest was 0.9% in 1962 and again in 1967.

Food prices at grocery stores went up 4.3% in 1987, while restaurant meal prices climbed 4.0%. For the second consecutive year, food prices rose more than did the price index of all consumer products and services, Dunham says.

Retail food price increases in 1987 included pork 8.2%, beef and veal 7.6%, milk and other dairy products 2.5%, seafood 10.6%, cereals 5.8%, peanut butter 13% (because of drought-reduced peanut production), fresh fruits 11.2%, and fresh vegetables 12.9%. Declines included poultry 1.4%, eggs 5.9%, and shortening and margarine 10% to 12%. (Changes in retail prices often vary from gains or losses in farm prices because of processing and marketing costs.)

Consumers spent $375 billion in 1987 for foods produced on U.S. farms. This was an increase of about 4% from 1986. Farmers got about $95 billion of that total. Americans spent 14.4% of their disposable personal income on food (including seafood and imported items) in 1987, down from 16.1% a decade earlier.

FARMLINE

AGRICULTURE . . . NATURAL RESOURCES . . . RURAL DEVELOPMENT
Practical economic intelligence from USDA's Economic Research Service

FEATURES

Soviet Union Buying More U.S. Grains, Soybeans *by Jack Harrison* 4

Fiscal 1988 is shaping up as a big year for the sale of U.S. grains and soybeans to the Soviet Union. The USSR has achieved only slight improvements in the inefficiencies that have plagued its agricultural sector, and is therefore continuing its overseas buying. Despite two good crop years and record livestock output, total Soviet farm production was up only very slightly in 1987.

Third World, Too, Has a Voice in Trade Talks *by Doug Martinez* 8

The big, well-to-do nations have taken the initiative in the current GATT negotiations in Geneva. But the voices and concerns of the developing countries also need to be heard and addressed if the talks are to be successful and any agreements lasting.

Farmers Turn Down the Irrigation Tap *by Eric Van Chantfort* 10

In an apparent reversal of a long-term trend, U.S. farmers are now applying less water to fewer cropland acres. A decline in net income from irrigation is one major reason for the change, as many farmers are squeezed by weak commodity prices and higher costs of pumping water up from greater depths.

With or Without Water, Plains Farming Endures *by Doug Martinez* 13

Significant adjustments often are necessary when the supply of water for irrigation becomes increasingly scarce and expensive. In the Texas High Plains, the era of adjustments has begun, raising questions about how irrigation-dependent communities will fare compared with neighboring dryland counties.

DEPARTMENTS

Reports in the News: Conservation Reserve; Classifying Farm Counties 7

Agricultural Roundup: Farm Population Trends; Rural Revitalization 16

Farmline Trends: Monthly Price Monitor; Latest Cattle Count 18

Soviet Union Buying More U.S. Grains, Soybeans

American grain exports to the Soviet Union in fiscal 1988 have already reached the highest level in 3 years, despite relatively large Soviet production in 1986 and 1987.

During the first 5 months (October through February) of fiscal 1988, the Soviet Union purchased 9.4 million tons of U.S. wheat and corn (75 percent wheat), and 2.1 million tons of oilseeds. Additional sales were reported in March. Total purchases during all of fiscal 1987 were 8.3 million tons (about equally divided between wheat and corn) and during fiscal 1986 were 8.5 million tons (mostly corn).

Under a 5-year trade agreement now in its fifth year, the Soviet Union agreed to buy at least 9 million tons of U.S. grain annually. This total is supposed to include 4 million tons each of wheat and corn. The remaining purchase requirement could be met by buying 1 million tons of wheat, corn, or some combination of the two, or 500,000 tons of soybeans or soybean meal.

Negotiations for a new trade agreement began in March. U.S. officials say an agreement reduces trade uncertainties. The Soviet Union, however, doesn't always meet the provisions of the agreement, and bought less than the specified minimums during each of the last 3 years.

Most of the U.S. wheat purchased by the Soviet Union since fiscal 1985 was sold under the Export Enhancement Program. EEP bonuses on wheat sales to the USSR in December ranged from about $29 a ton to $42 a ton. Created in 1985 as a transition tool to boost U.S. exports and help reduce large stocks of commodities, the EEP was an important factor in the sale of 19 million tons of grain to various countries during fiscal 1987.

More Soybeans Bought, Too

The Soviet Union has boosted its buying of more than just grains this year. Soviet purchases of U.S. soybeans and products through February reached a record 2.1 million tons, including 1.3 million tons of meal and 800,000 tons of beans. (The EEP does not cover soybeans.) "The Soviets have a serious shortage of protein for livestock feed, and that's why they have been buying soybeans and soybean meal," says economist Christian Foster of USDA's Economic Research Service.

Increased investments in Soviet agriculture have not resulted in corresponding gains in production.

Soviet purchases of U.S. soybeans during the first 4 years of the current trade agreement totaled just over 2 million tons, including 420,000 tons in fiscal 1984, none in fiscal 1985, 1.52 million tons in fiscal 1986, and 68,000 tons in fiscal 1987. No U.S. soybean meal was bought by the Soviet Union during those 4 years.

Soviet grain production was 211.3 million metric tons last year, up slightly from the 1986 level of 210.1 million tons. Although the record is 237.4 million tons produced in 1978, the 1986 and 1987 achievements marked the first time the Soviet Union had two consecutive grain crops of more than 200 million tons. That accomplishment was especially noteworthy because of less than ideal weather during both of those years, Foster says.

However, the 1987 crop was of poor quality and contained above-average amounts of moisture. Soviet production is reported in nonadjusted "bunker weights," a procedure that in itself may discourage quality, Foster says.

Despite the two good grain crops in a row, Soviet agriculture still has many basic inefficiencies, says another ERS economist, Edward Cook. He notes that General Secretary Mikhail Gorbachev, who has headed the Soviet Communist Party since 1985, has had only slight success so far in his efforts to reform his country's agricultural sector.

Increased investments in Soviet agriculture during the 1980's have not resulted in corresponding gains in production. During the 1981-85 period, for example, investments in farming were up 140 percent from spending in the 1966-70 period, but agricultural output increased only 30 percent, the economist says.

"Gorbachev seems now to be taking a less radical approach to agricultural reform than was anticipated a year ago," Cook says. There has not been any dramatic shift toward a "market economy." Also, the promised increases in local autonomy for farm managers have been slow to materialize. Rather, "the focus now seems to be on making adjustments to the traditional system," Cook adds.

The Soviet agricultural system has historically been hampered by a lack of incentives and authority for farm workers and managers. Policies have been decreed from above, with little reward for greater

U.S. Exports of Grain and Soybeans to the Soviet Union This Fiscal Year Are Already the Highest Since 1985

	Current 5-Year Agreement[1]				
	1984	1985	1986	1987	1988[2]
	Million tons				
Wheat	7.59	2.89	0.15	4.08	6.80
Corn	6.48	15.75	6.81	4.10	2.60
Soybeans	.42	—	1.52	.07	.80
Soybean meal	—	—	—	—	1.30
Total	14.49	18.64	8.48	8.25	11.50

[1]The 5-year grain agreement expires on September 30, 1988. The agreement years are from October 1 through September 30, matching U.S. fiscal years. [2]Data as of February 29, 1988.

efficiency. Gorbachev's reforms have succeeded somewhat in reducing paperwork associated with agriculture, Cook says, but incentives and autonomy remain inadequate by our standards.

The economist notes that in the Soviet Union money is still taken from profitable farms and given to unprofitable farms—in part to even out differences in farm wages. Large disparities in income are thus avoided, but there is little incentive to work harder to try to make a farm more profitable.

Farm managers still have little choice but to accept the inputs—such as machinery, fertilizer, and pesticides—provided to them, Cook says. They aren't allowed to shop around for better quality and better prices.

Livestock Production Up

Preliminary Soviet data indicate that gross agricultural production increased only 0.2 percent in 1987, compared with growth of 5.3 percent in 1986. The livestock sector provided the major bright spot, Cook says, with output of animal products at record levels. Meat production rose 3 percent to 18.6 million tons slaughter weight, and egg production was up 2 percent. Milk output increased 1 percent to 103.4 million tons.

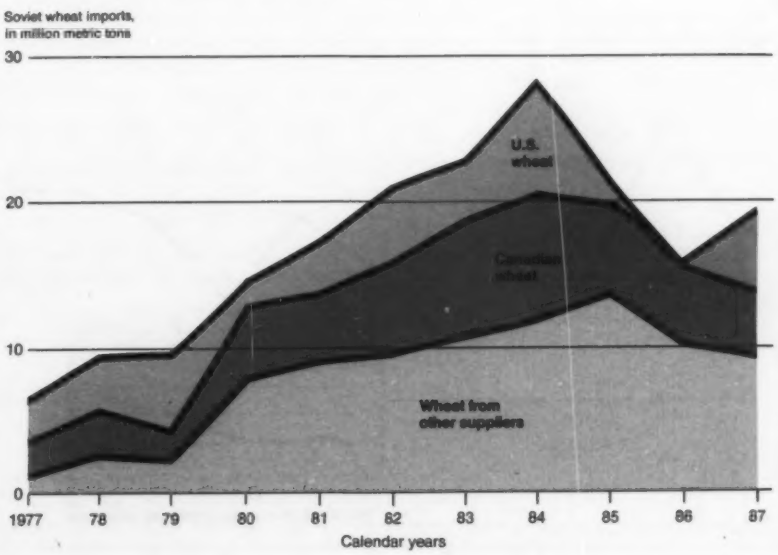
Animal inventories, except poultry, fell slightly during 1987, due in part to culling of unproductive livestock. January 1, 1988, inventories were 120.5 million head of cattle (including 42 million cows), 77.3 million hogs, and 147 million sheep and goats.

The Soviet Union is putting increased emphasis on livestock, in an effort to provide more meat to Soviet consumers.

Total Soviet crop production was lower in 1987, because of much lower output of fruits and potatoes and modest declines in seedcotton and vegetables. At the same time, there were substantial increases in production of sugar beets and sunflowerseeds.

The Soviet Union has reported that production costs for most commodities rose in 1987, in part due to unfavorable harvest conditions that resulted in greater use of manual labor. The proportion of farms that

The United States Regained a Substantial Share of Soviet Wheat Imports During 1987



were unprofitable was reported as increasing from 13.2 percent in 1986 to 14.6 percent in 1987, Cook says.

Last year's average grain yield of 0.74 tons per acre was the second highest on record, although just a little above the 1986 level of 0.73 tons, Foster notes. Corn production in 1987 reportedly totaled 14.8 million tons, the best in 25 years.

Wheat production, however, was down last year. Estimated at 80.5 million tons, it was 11.8 million tons below the 1986 total. The 1987 coarse grain output, by contrast, was an estimated record 115.8 million tons, up 9.9 million tons from the previous year's 105.9 million tons.

The quality of the 1987 Soviet wheat crop was apparently affected by bad weather, Foster says. Winterkill hurt the winter wheat crop, and rain at harvest damaged the spring wheat. As a result, most of the wheat purchased by the Soviet Union this year has been bread quality and durum.

Last year, feed wheat accounted for a larger than usual percentage of Soviet wheat imports, according to USDA estimates.

Part of the reason for improvements in grain production is heavier and more efficient use of fertilizer, herbicides, and pesticides. Foster also notes that the area planted to grains has been decreasing as more fields are left fallow.

Plans call for "intensive technology" practices to be applied to 96 million acres of Soviet grain this year. In 1987 these improved production practices (including more and better use of fertilizer and pesticides, higher yielding crop varieties, better machinery, and better soil management practices) were used on about 87 million acres, up about 20 percent from 1986.

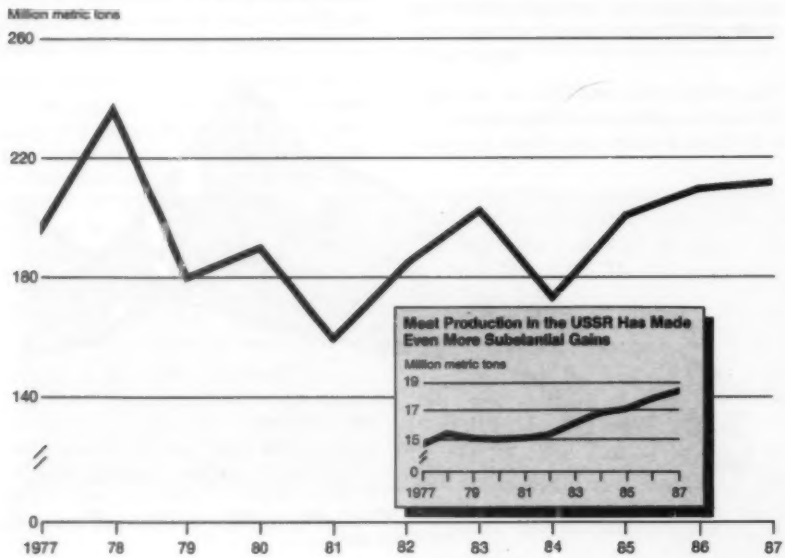
Prospects for the 1988 Soviet winter grain crop remain good, particularly in comparison with the problems experienced last year, Foster says. At midwinter, moisture supplies and the protective snow cover appeared to be adequate for good grain development this year. Winter crops (not just grains), originally planned to be seeded on 96-99 million acres, are estimated to have been sown on 91-94 million acres.

The primary concern of Soviet farmers this year, Foster says, is a shortage of good-quality seed for spring grains. This problem in quality and quantity of grains for seed resulted from excessive rain during harvest time in certain areas last fall.

Other difficulties, too, continue to plague Soviet agriculture. "There are enormous problems with the Soviet agricultural infrastructure, including roads and storage, transportation, and processing facilities," Foster says, adding that quick improvement in this area will not be possible. □

[Based primarily on information provided by economists Edward Cook and Christian Foster of the Agriculture and Trade Analysis Division, Economic Research Service.]

Soviet Grain Production Has Been Trending Upward During the Last 3 Years, But Still Remained Below the 1978 Record



CRP Enrollment Figures Tallied

The federal Conservation Reserve Program (CRP) is designed to protect some of the nation's most highly erodible and fragile cropland.

Landowners agree to place eligible land in trees, grasses, or other approved vegetative covers for at least 10 years. In return, they receive annual rental payments, plus cost-sharing assistance in establishing the cover vegetation. The goal is 40-45 million acres in the CRP by 1990.

In fiscal 1987, the second year of enrollment, 13.8 million acres on 126,421 farms entered the CRP. The average contract enrolled 109 acres at a rental rate of $50.01 per acre per year.

Texas enrolled the most land, 1.82 million acres, followed by Iowa at 1.18 million, Minnesota at 1.02 million, and Colorado at 954,474.

Nearly half the total acreage entering the reserve had an erosion rate of 20 or more tons per acre per year before a conservation practice was implemented. A tenth of the acreage was losing an estimated 40 or more tons of soil per acre per year.

This statistical report provides national, regional, and state data on land enrolled in the CRP in the first five signup periods for fiscal years 1986 and 1987. The report also summarizes CRP rules and regulations, briefly outlines signup procedures, and highlights the program's accomplishments in its first 2 years.

The Conservation Reserve Program: Implementation and Accomplishments, 1986-87 *by Dicks, Llacuna, and Linsenbigler. (Published January 1988; 119 pages of mostly tabular data; GPO Stock No. 001-019-00573-4; $6.00.)*

Farm Role Varies In Rural Counties

In this report, economists Tom Carlin and Bernal Green investigate the relationships between the changing structure of agriculture and the changing role of farming in local communities. The dominant farm structure that emerges in a particular community, say the authors, is closely linked to the basic economic, demographic, and geographic attributes of that community.

They go on to identify the areas of the country that are dominated by small-farm and large-farm agriculture. Farms are classified based on gross sales.

Small-farm counties, or counties that tend toward a small-farm structure, are concentrated in the eastern and western thirds of the country. Not surprisingly, large-farm counties dominate in the nation's midsection—especially the Corn Belt and Northern Plains—and in parts of the West.

In general, large-farm counties have a smaller employment base, a much slower rate of population growth and job creation, and a more specialized economy with fewer nonfarm jobs than small-farm counties. Their overall economic performance is closely tied to agriculture's fortunes.

Global pressures and technological developments, say the authors, are likely to push many large-farm areas toward further specialization and farm consolidation, "possibly with only a few super farms remaining." In the small-farm areas, the diversified economic base, opportunities for nonfarm jobs, and the proximity to metro centers will probably continue to foster small-scale, part-time agriculture.

Local Farm Structure and Community Ties *by Carlin and Green. (Published March 1988; 22 pages of text, maps, and tabular data; GPO Stock No. 001-019-00555-6; $1.50.)*

Name_____
Company_____
Address_____
City, State, Zip_____

Mail order form to:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

Please send me ____ copies of:

The Conservation Reserve Program
SN 001-019-00573-4
$6.00

Please send me ____ copies of:

Local Farm Structure and Community Ties
SN 001-019-00555-6 $1.50

Total charges $_____

For faster service, call GPO's order desk at (202) 783-3238 and charge your purchase to your VISA, MasterCard, or GPO Deposit Account.

☐ Enclosed is $____ (check or money order payable to the Superintendent of Documents. Please do not send cash or stamps). Add 25% for any foreign address.

☐ Charge to my Deposit Account_____

☐ Charge to ☐ Visa ☐ MasterCard

Account No._____ Expiration date_____

Signature_____

For Office Use Only

Quantity Charges
Enclosed
To be mailed
Subscriptions
Postage
Foreign handling
MMOB
OPNR
UPNS
Discount
Refund

Third World, Too, Has a Voice in Trade Talks

In the global trade talks now under way, it is the major industrialized nations that have captured the spotlight with their perceived problems and proposed remedies.

If the talks are to be successful, however, other voices will have to be heard and other concerns may have to be addressed—the voices and concerns of the developing nations.

This reminder comes from economists Nicole Ballenger and Carl Mabbs-Zeno, two analysts with USDA's Economic Research Service. Ballenger and Mabbs-Zeno recently examined the critically important role of developing countries in the talks.

"Third World nations are such important traders in many world commodity markets that an agreement not sanctioned by them may not be meaningful or lasting," says Ballenger.

The setting for the negotiations is Geneva, Switzerland, where members of GATT, the General Agreement on Tariffs and Trade, are meeting. Among the accords members hope to strike is one relating to agricultural trade, which has become rife with disputes over trade barriers and export subsidies.

Among the participants in the talks are the United States, the European Community (EC), Japan, Canada, Australia, and a few other industrialized nations. The rest of the participants—some 95 in all—are developing countries as diverse as Brazil, South Korea, and Nigeria. Any new GATT agreement to substantially reduce the barriers in world agricultural trade would require a consensus of GATT members.

A Common Interest—Growth

The economists suggest that, despite the many differences among nations, there appears to be a broad area of common interest.

By and large, the major exporting nations of the industrialized world are looking to the developing nations as the markets with the greatest potential for future growth. The developing nations, in turn, are looking back to the industrialized world to provide open markets and reasonable prices for their products, so their economies can grow stronger and provide higher standards of living.

That means, Ballenger says, that "developing countries have an opportunity to participate more fully in world trade negotiations than they ever have before."

For major exporters like the United States, faster growth in markets may depend largely on economic gains in developing countries, where 4 of the world's 5 billion people live. Economic growth can come only with increased income, a prospect that can be enhanced by permitting producers in Third World countries to sell their farm products and other goods more freely around the world.

In many cases, these nations have been frustrated by closed markets, low prices for their exports, and even subsidized competition from the industrialized countries.

Varied Proposals Put on GATT Table

The United States wants the clock to start running on farm subsidies around the world. The Administration has proposed a 10-year timetable for the end of these and other practices that distort agricultural production and trade.

In global trade talks in Geneva, Switzerland, the United States is calling for the elimination of all import barriers and a worldwide approach to the way health and sanitary regulations are designed and applied—to ensure such rules are not used as trade restrictions.

But other countries—notably the EC—have other ideas they're putting on the negotiating table.

EC officials want a much more gradual approach to curbing farm subsidies. They concede that subsidies serve to distort trade, but say that eliminating all subsidies would severely disrupt markets.

Instead, they say this problem can be handled only by getting a handle on the issue of market stability. They propose that export market shares be maintained on the basis of proportional shares of major commodity markets held by large exporters, at least in the short term.

In other words, the market would be divided by a percentage formula yet to be determined. The EC also wants to reinforce the rules governing agricultural support and trade while reducing levels of protection. In effect, that means they are willing to talk about reducing government intervention, as long as market shares are protected.

The Cairns Group, composed of 14 large agricultural exporters, including Australia, Argentina, Brazil, and Thailand, is much closer to the U.S. position. The group not only agrees with the United States on the removal of import barriers and export subsidies, but also with rooting out other agricultural support measures that affect agricultural production and trade.

Some areas would be exempted, such as research and extension programs, as well as farm income support payments that are not tied to production. The Cairns proposal would have the effect of pushing many countries, including Cairns members, to radically reform the way they intervene in agriculture.

Japan recently announced its own GATT proposal, which would freeze and then phase out farm export subsidies. However, Japan insists that every nation has the right to subsidize domestic producers in order to ensure "food security."

"This GATT round could create a freer trade environment in which U.S. agricultural exports could prosper directly, through the reduction in world agricultural protection, and indirectly, through economic growth in developing countries," says Ballenger.

Greater Reliance on Agriculture

For developing countries, perhaps, the stakes are even higher, particularly in the case of agricultural trade.

"The priority being given to agricultural trade issues in this GATT round should spur Third World participation because agriculture is more vital in many developing economies than in industrial market economies," Mabbs-Zeno says.

In fact, about a fifth of the Third World's total exports are agricultural commodities. In some places, that percentage balloons to a much higher level—44 percent in Brazil, for example, and 77 percent in Argentina (1985 figures).

Furthermore, the value of agricultural production is a much greater part of Third World nations' gross domestic product (GDP) than it is in industrialized nations. In 1985, 20 percent of the GDP in developing countries was derived from agricultural production, while agriculture accounted for only 3 percent of GDP in industrialized nations.

The United States has proposed an end to farm subsidies and import barriers. The EC, Japan, and a 14-nation bloc called the Cairns Group (composed of Australia, New Zealand and several developing countries) have also made proposals.

Although Ballenger and Mabbs-Zeno are not prepared to offer a prediction of Third World reaction to these plans, they believe that developing nations will be asking some of the following questions during the initial stages of negotiations:

Must Third World nations make the same adjustments in cutting back their support programs as major industrialized nations? Should lower-income nations participate to the same extent as Third World nations that have higher incomes? What are the implications of reforming agricultural policies and programs that have protected agricultural sectors in developing countries?

"The critical role of agriculture in many developing countries suggests there could be profound political and economic consequences of policy changes," says Ballenger.

There will also be questions on how, in the context of negotiations, intervention in agriculture should be handled where it taxes producers. Industrialized countries tend to protect their agriculture at the expense of consumers or taxpayers. Many developing nations, by contrast, tax their agriculture and support their processing sectors.

Perhaps one of the most important ways that Third World governments intervene in agriculture and allied sectors is the practice of keeping food prices low—and therefore maintaining an accessible, affordable food supply for their consumers.

An overvalued currency has the effect of "taxing" producers because it keeps local currency prices of traded goods (such as agricultural products) lower than they would otherwise be. Other means of taxing producers include border taxes, export quotas, and trade licensing requirements that are used, for instance, in Argentina, Brazil, Mexico, and Nigeria. Marketing boards that buy crops at prices lower than world levels are found in India, Sudan, and, until 1987, Nigeria.

Boosting Government Revenues

In addition to keeping consumer prices low in many countries, taxing agricultural producers can provide much-needed government revenues, and can assist agricultural processing industries (when exports of the raw products are taxed). Many Third World nations are trying to build processing sectors so they aren't exporting low-priced raw products and importing the higher priced final products processed elsewhere.

"In Argentina, where agriculture accounts for 80 percent of foreign exchange earnings, agricultural export taxes make up 15 percent of the central government revenues," says Ballenger. "And in Brazil, soybean exports are taxed at a higher rate than exports of soybean products in order to aid the country's processing plants. The export taxes depress the domestic prices of the beans, providing an input price subsidy to the domestic crushing industry. Mexico has also taxed or limited cotton exports to encourage supplies for its domestic textile industry."

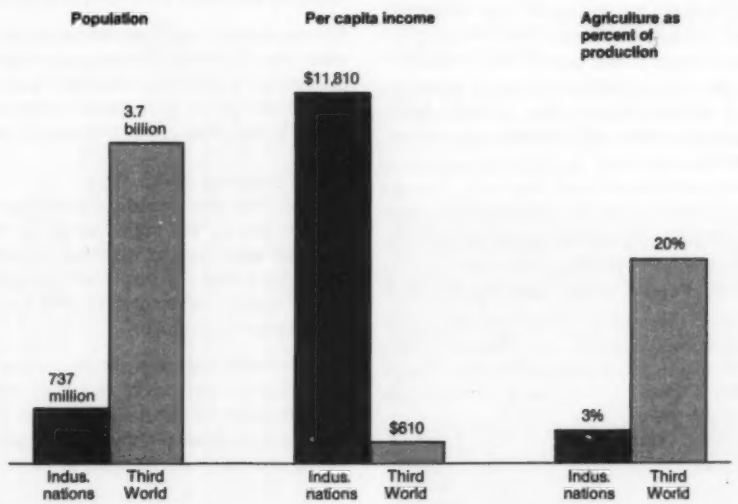
If asked to give up these and other means of government intervention, developing nations will be asking what can replace them. Their concerns will have to be addressed if an accord is to be reached, the analysts say.

Would such an accord be in the long-term interests of U.S. agriculture? The answer may depend on the nature of the accord and on how U.S. agricultural interests are defined. In any case, most analysts agree on one thing.

"For our exports to grow, Third World economies must find larger markets for their farm products," says Ballenger. "Any agreement that cannot foster that growth would be a weak one." □

[Based primarily on information provided by economists Nicole Ballenger and Carl Mabbs-Zeno of the Agriculture and Trade Analysis Division, Economic Research Service.]

Third World Nations Have More People, Less Income, and a Greater Dependence on Agriculture*



*Data are for 1985, from the World Bank's *World Development Report, 1987.*

Farmers Turn Down the Irrigation Tap

Until the 1980's, the spread of irrigation in the United States was as persistent as an incoming tide. Every few years, researchers found more water soaking more farmland.

The latest data suggest that the tide has turned. For the time being, farmers are applying less water on fewer acres.

Two Economic Research Service economists, John Hostetler and Michael Moore, report that the amount of water used for irrigation declined between 1980 and 1985, the first such drop since 1950.

They cite preliminary figures recently compiled by the U.S. Geological Survey, an agency which collects nationwide water-use data every 5 years. Its estimates indicate that around 137 billion gallons a day went for agricultural irrigation in 1985, down from 145 billion a day in 1980.

This "unprecedented decline," according to the economists, stemmed from a 17-percent drop in the use of groundwater (water pumped from underground sources). Agriculture's use of water drawn from reservoirs, lakes, rivers, and other surface water sources increased slightly between 1980 and 1985, continuing its long-term expansion.

This was not the first falloff in groundwater use. A much smaller decline showed up in the previous 5-year period, but it was offset as surface water use rose an average of 6 billion gallons a day, pushing total irrigation water withdrawals to another record.

Agriculture's Use of Groundwater for Irrigation Dropped Sharply in 1985, Pulling Down Total Water Use

	1975	1980	1985
	billion gallons per day		
Water used for irrigation:			
Groundwater	57	55	46
Surface water	84	90	91
Total	141	145	137

For the time being, the tide has turned, and farmers are applying less water on fewer acres.

Economist Hostetler says the turnaround since 1980 partly reflects conservation efforts, participation in farm programs, and declining net income from irrigation. That's particularly true in those western states that depend on rapidly depleting groundwater supplies.

To cut costs, many farmers have adopted water-saving technologies, such as center pivot sprinklers. Some have installed drip and trickle irrigation systems, which boast a 90-percent-plus efficiency rate in delivering water directly to the crops.

The various sprinkler-type systems—including center pivot, hand or mechanical move, solid set, and other pressurized irrigation equipment—were reportedly used on 18.3 million acres in 1984. That's up from 7.2 million acres 20 years ago. Other water-saving practices include irrigation scheduling and switching to crops requiring less water, as in corn to sorghum.

Several western states are encouraging or enforcing conservation measures. In parts of Arizona, for example, each farm is given a maximum yearly groundwater allotment, which is designed to decline over time.

Fewer Irrigated Acres, Too

Although the water conservation measures are important, the major factor in the reduced water use is not that irrigators have tightened up on their spigots, Hostetler says. Rather, it is the shift in U.S. acreage out of irrigation.

Irrigated area had been climbing through the decades, eventually reaching more than 50 million farmland acres in 1978. The figure edged down slightly in 1982 before falling sharply to 44.7 million in 1984.

Hostetler notes that declines in irrigated acreage have been recorded in Texas, Oklahoma, Arizona, New Mexico, Colorado, and Utah. These are states where irrigators depend heavily on groundwater reservoirs and where water tables have been falling.

In Arizona, for instance, about 57 percent of the irrigated acreage relies on groundwater. Average pumping lifts in 1985 ranged from 75 to 535 feet, and the rate of decline in the water table was 2 to 3 feet per year.

"Farmers adapt in several ways to a continuing decline in the groundwater table," Hostetler says. "Ultimately, they must return to dryland farming or abandon farming in the affected area."

The shift in acreage out of irrigation, he says, reflects the combination of falling water tables, rising energy costs, and—most telling, in his view—the relatively weak commodity prices of the 1980's.

In those areas that have been experiencing severe groundwater declines, such as the Texas High Plains, irrigation costs have been climbing rapidly. The increased expense of pumping water up from greater depths is compounded by rising energy prices.

"Roughly half the irrigation systems in the country are driven by electric motors, and electricity prices are going up. In the Southern Plains (Texas and Oklahoma), natural gas is the major energy source, and gas prices have been rising since deregulation," Hostetler says.

Squeezed by weak commodity prices and higher pumping costs, many farmers in the southern part of the Plains have already cut water use drastically, and some have shifted to dryland farming.

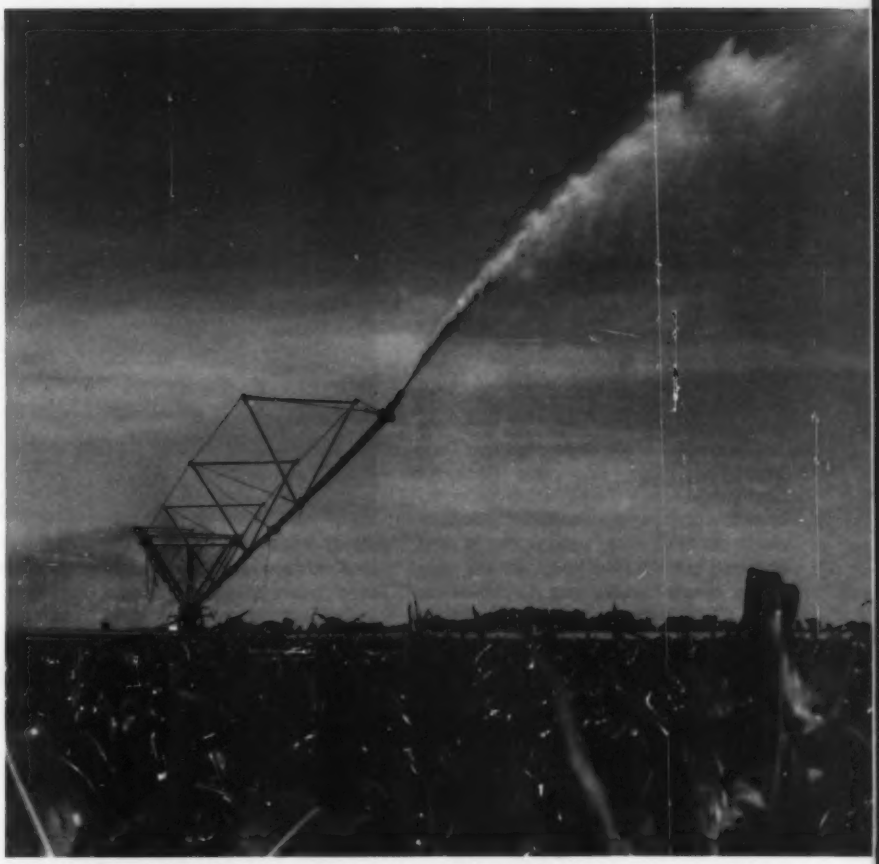
All of these adjustments appear to be having an impact. In the Texas High Plains, the water table reportedly rose more than half a foot in 1986, the first increase in 36 years, Hostetler says. Above-average rainfall helped replenish the aquifer.

Irrigation Increasing Elsewhere

While many western states were becoming more frugal in their water use, other parts of the country were putting more acres under irrigation, at least through 1984. Until recently, Arkansas was increasing its rice acreage, all of which is irrigated. Irrigation was also expanding in the Southeast, as double-cropping of wheat and soybeans spread. Irrigation is used to ensure essential moisture for the beans, which are planted late in the season after the wheat is harvested.

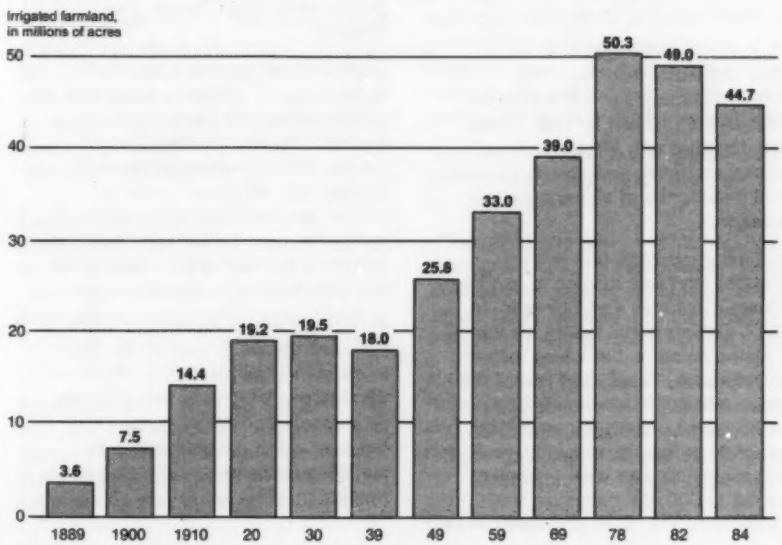
These trends may have slowed in the last few years, but Delta farmers are still shifting acres into corn, generally relying on irrigation. And in the Corn Belt and upper Midwest, supplemental irrigation probably continues to grow as farmers augment rainfall to boost yields and protect themselves against dry spells.

The increases in irrigation in these more humid areas with generally abundant surface water sources—coupled with the declines in dry, groundwater areas—have trimmed U.S. agriculture's overall reliance on underground aquifers. In 1975, irrigators pumped 40 percent of their water from below ground. In 1985, groundwater provided less than 34 percent of the water used for irrigation.



Water-saving sprinkler irrigation systems were reportedly used on 18.3 million acres in 1984, up from 7.2 million acres 20 years earlier.

Between 1978 and 1984, Irrigated Farmland Area Declined by 5.6 Million Acres



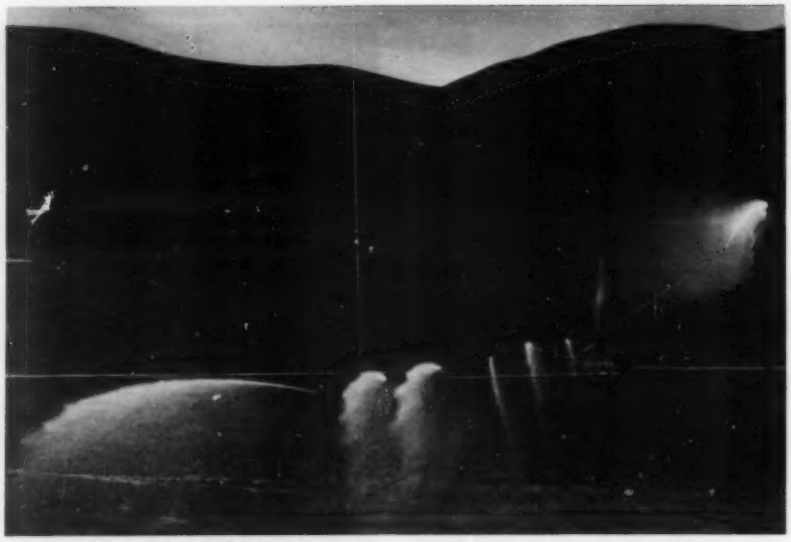
Hostetler says it would be too speculative on his part to try to predict whether the recent declines in irrigated acreage and water use will continue. Government acreage reduction and land conservation programs will probably pull some additional irrigated acres out of production, and the pressures to cut water use are not expected to abate in the Plains.

On the other hand, higher commodity prices, when coupled with the yield-boosting appeal of irrigation, could alter the economic equation.

"A lot of people who dropped out of irrigated production in recent years still have

the equipment sitting around ready to use," says Hostetler. "If commodity prices were to strengthen significantly, you'd probably see many of them starting up the pumps again." □

[Based on information provided by economists John Hostetler, Michael Moore, and John Day of the Resources and Technology Division, Economic Research Service.]



Eventually, many farmers in groundwater-dependent areas will have to return to dryland farming, or abandon farming in these areas.

Irrigation Peak: 50 Million Acres

The history of irrigated agriculture in the United States has been one of nearly continuous growth, according to Economic Research Service economists.

Until recently, the only significant exception in the last 100 years occurred during the Great Depression, when irrigated farmland acreage dropped. Expansion resumed after the 1930's.

Records indicate that 3.6 million acres were irrigated in 1889. At the time, total U.S. farmland acreage stood at about 623 million, so around six-tenths of a percent of the land was irrigated.

Both the number of irrigated acres and the percentage of total farmland in irrigation increased steadily, reaching 19.5 million acres, or 2 percent of U.S. farmland, by 1930. By 1978, the peak year, 50.3 million acres were under irrigation, 5 percent of U.S. farmland.

At the turn of the century, feedstuffs—corn and other feed grains, hay, pasture, and silage—accounted for just over 80 percent of irrigated acreage. All the irrigated land was in the West. Without the winter feed made possible through irrigation, the Great Plains livestock industry might never have developed.

By 1982, the share of U.S. irrigated acreage devoted to feedstuffs was down to around 61 percent. The proportion devoted to wheat and rice had risen from 10 to 17 percent of the total, and the proportion in various other crops, such as cotton, sugar, peanuts, tobacco, soybeans, and fruits and vegetables, had climbed from 9 to 21 percent.

The two leading irrigated crops in 1982 were corn and hay, with irrigated acreages of 9.6 million for corn and 8.5 million for hay. These two, together with wheat, pasture, cotton, orchards, and rice, accounted for three-fourths of all irrigated U.S. acreage.

In 1889, more than half of all irrigated land was located in just two states—California and Colorado. In 1982, California still led the nation in irrigated acreage, but it was followed by Nebraska, Texas, and Idaho. Colorado was fifth. The two top states, California and Nebraska, contained about 30 percent of irrigated acreage nationwide. The 17 western states, as a group, accounted for 85 percent of the acreage.

The largest water user in the United States is the industrial sector, which takes more than half of all water drawn. Agriculture is second, using more than a third of the water—and more than nine-tenths of that for irrigation.

However, agriculture's demands on the nation's water supply are much greater than these figures may suggest.

Specialists talk in terms of "consumptive use," meaning water that is consumed so that it's no longer available to be returned to the source. Most water drawn by industrial and residential users is treated and returned to the source for further use. A relatively small proportion is consumed by people or in the manufacturing process.

In agriculture's case, though, more than half the water applied to crops is consumed as plant food or is lost through evaporation or transpiration. As a result, agriculture accounts for the bulk of the nation's total consumptive water use—a substantial 84 percent in 1985.

With or Without Water, Plains Farming Endures

In the Texas High Plains, the era of expansion in irrigated agriculture ended years ago.

Many counties that never had access to significant amounts of irrigation water barely noticed the change. For others, however, a new and more challenging era of adjustments to less intensive farming began.

These developments raise some critical questions about the future of irrigated areas in the High Plains: How will they cope with the difficult adjustments that still await them as more wells run dry? And, would they be better off if they had never come to depend on the once-vast pool of underground water called the Ogallala Aquifer?

Similar questions might apply in other parts of the West where irrigated areas rely on an increasingly scarce and expensive water supply.

Now, some tentative answers are available based on research by Wendell Holmes and Mindy Petrulis of USDA's Economic Research Service. The two economists recently examined how water has lifted the economic performance of one irrigated area in the High Plains, contributing to a larger and more diversified economic base.

The transformation of this area—seven irrigated counties in the West Texas portion of the Plains—is even more evident when contrasted with the direction taken by eight neighboring dryland counties, where population and job opportunities have continued to shrink.

Economic Transformation

The seven irrigation counties enjoyed an economic boom in the 1940's and 1950's "as irrigation became widespread in some areas of the High Plains," says Holmes. The counties are Castro, Crosby, Floyd, Hale, Lamb, Parmer, and Swisher.

Drawing on ample supplies of groundwater from the Ogallala Aquifer, the move to irrigation was also powered by the development of center pivot irrigation systems (and low prices for the natural gas to run them).

While the irrigated counties experienced rapid economic growth and development, the dryland counties registered declines in population and employment.

"The introduction of the center pivot system made it possible to nearly triple yields of cotton, wheat, and corn on land previously farmed without irrigation," says Holmes. "As a result, surrounding counties prospered, and by 1960 the Texas High Plains had become one of the most irrigation-dependent areas of the United States."

The nearby dryland counties—which lie just to the east of the Ogallala Aquifer—have never had enough water from either surface or groundwater sources to develop an irrigation-based agriculture. That fact has been plain enough from their economic performance beginning in the 1940's.

"At that time, and especially after World War II, economic development took sharply different directions in the two areas," says Holmes. "The economy of the dryland farming area continued to stagnate and periodically worsen, because of the lack of water for crops." He notes there is erratic rainfall in this dryland area, where adverse weather cycles may last for several years.

The dryland counties are Baylor, Cottle, Foard, Haskell, King, Knox, Stonewall, and Throckmorton.

"One effect has been a continued heavy outmigration of rural people," says Holmes. For example, during the 1940-84 period, total population was cut in half, and employment was sliced by about a fourth.

In contrast, he says, the irrigated counties have experienced rapid economic growth and development throughout most of this period. Despite a small decline in the last few decades, total population in the mid-1980's exceeded 100,000 (a 38-percent increase over 1940), and employment hovered around 41,000 (a nearly 80-percent increase since 1940).

Facing a Challenging Future

But the irrigated counties—as well as other areas of the High Plains and other parts of the nation—are now facing adjustments with the decrease in the availability of groundwater for irrigation.

"In order to maintain a viable agricultural economy, this area must return to a dryland type of production," says Holmes. "How soon the transition will be made depends somewhat on how willing farmers are to change their irrigation practices."

He explains that "it seems reasonable to assume that some irrigation will continue for a number of years. Development of new technologies in irrigation and more drought-tolerant plants may push the absolute end of irrigation further into the future. Whatever the time, though, adjustments must be made in order to be ready when the wells run dry."

However, the end of the irrigation era in these counties doesn't mean the end of agriculture or the demise of the rural economy.

"Many benefits from irrigation have been incorporated into the infrastructure of the area and will no doubt continue," says Holmes. "For instance, the area has an ideal climate for cattle feeding and has established itself as a cattle feeding and processing area, with all the attendant facilities. This seems likely to persist. If cattle feeding activities are to continue at their current levels, as seems likely, farmers will need to use an increasing percentage of the available irrigation land for feed grains and silage to service the cattle feeding industry."

Moreover, he says, "past irrigation development has left a legacy of what appears to be a fairly large population base with diversified employment opportunities for local residents."

(continued on next page)

One probable change, says Holmes, is something that simply reflects national trends: Farms will no doubt get larger as operators expand their operations to more fully utilize their equipment and labor resources.

Growing Apart

The contrast in the pattern of development of the two areas—built from an abundance of water in one area and the lack of water in the other—becomes more apparent when examining an even earlier phase of history.

"Both areas started the century as sparsely populated frontier counties," says Holmes, citing the 1900 Population Census which showed 15,000 residents in the eight dryland counties and only about 6,000 in the seven irrigated counties.

In the three decades that followed, both areas rode the success of the booming West Texas farm economy, prospering in agriculture mainly because of the large-scale ranching and cotton enterprises.

By 1930, he says, total population had reached 79,000 in the irrigated counties and had peaked at 63,000 in the dryland counties.

"Rapid growth came to a halt in the 1930's as the Great Depression took hold nationwide, farm prices plummeted, and drought conditions persisted in West Texas," says Holmes. "Since attempts to farm marginal land under these conditions proved futile, many small-scale farmers had to seek employment opportunities elsewhere."

The impact was visibly evident—population dropped by 6 percent from 1930-40 in the irrigated counties and by double that percentage in the dryland counties.

And then came the great change that swept in with the water.

"The irrigated counties were transformed as local farmers adopted the widespread use of irrigation systems based on underground water pumped from the Ogallala Aquifer," says Holmes. "Plentiful water supplies and the application of center pivot irrigation systems enabled farmers to apply water to more types of land and crops efficiently and with a minimum of labor."

A Doubling in Irrigated Farms

In less than 20 years, the number of irrigated farms more than doubled—and the average size of these farms rose from 47 to 324 acres.

Farmers now had the technology—and the water—to intensively cultivate arid or semiarid land which had limited dryland farming uses. Irrigation was responsible for soaring yields of cotton, sorghum, wheat, and corn on previously dryland farms, and for pushing the value of farm products sold in the irrigated counties to a tenfold increase between 1940 and 1959.

"As the proportion of irrigated cropland rose from 7 to 72 percent in the same period, the farm product mix also changed," says Holmes. In 1940, cotton accounted for the largest share of farm product sales (30 percent), followed by wheat and cattle. By 1959, cotton led by a much greater margin (48 percent), followed by cattle and then wheat.

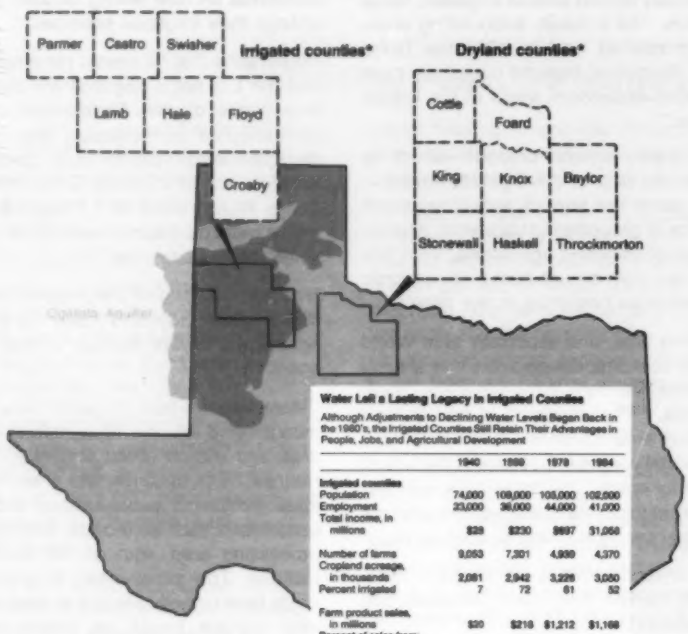
He says these changes in farm structure were accompanied by considerable changes in the overall local economy of the irrigated counties.

"The introduction of irrigated agriculture, which allowed land to be intensively farmed, provided more jobs for people in the service and supply sectors," says Holmes. In the 19-year period ending in 1959, population in the area increased 46 percent, and total employment rose 65 percent.

The rewards of irrigation also flowed into the economy in the form of increased total income. That economic measure had slumped during the 1930's, but then rebounded, registering more than an eightfold increase by 1959 over the 1940 number. Farm income growth was even better, increasing by 10 times in this period.

In the counties not blessed with an abundance of water, Holmes says, the limited opportunities in the farm sector affected the

A Study in Contrasts: Irrigated Texas Counties Followed a Different Development Path Than Dryland Counties



*Counties selected for this study.

Water Left a Lasting Legacy in Irrigated Counties

Although Adjustments to Declining Water Levels Began Back in the 1960's, the Irrigated Counties Still Retain Their Advantages in People, Jobs, and Agricultural Development

	1940	1959	1978	1984
Irrigated counties				
Population	74,000	108,000	105,000	102,000
Employment	23,000	36,000	44,000	41,000
Total income, in millions	$29	$230	$697	$1,050
Number of farms	9,053	7,301	4,939	4,370
Cropland acreage, in thousands	2,091	2,942	3,226	3,050
Percent irrigated	7	72	81	82
Farm product sales, in millions	$20	$218	$1,212	$1,168
Percent of sales from:				
Cotton	30	48	16	7
Cattle and calves	16	10	62	64
Wheat	22	8	1	4
Sorghum	12	3	3	4
Corn	...[1]	...[1]	12	12
Dryland counties				
Population	86,000	38,000	28,000	28,000
Employment	16,000	14,000	12,000	12,000
Total income, in millions	$17	$58	$178	$327
Number of farms	6,334	3,952	2,727	2,597
Cropland acreage, in thousands	909	1,145	1,200	1,230
Percent irrigated	...[1]	6	4	2
Farm product sales, in millions	$10	$48	$112	$123
Percent of sales from:				
Cotton	41	43	40	21
Cattle and calves	37	38	45	44
Wheat	7	10	8	24
Sorghum	6	1	3	3
Corn	...[1]	...[1]	...[1]	...[1]

[1]Less than 0.5%.

nonfarm sector as well. As farms grew larger—and fewer in number—to maintain their income, population declined some 32 percent in the 1940-59 period, and total employment fell more than 10 percent. Employment opportunities diminished as the economic base became increasingly specialized.

"Dryland farming does not require a large labor force,nor can it support a large rural or urban population," says Holmes. "Thus, there was little inducement for people to move into the area or, having been born there, to stay. More and more people found employment elsewhere."

Period of Adjustment

The next 19 years saw a slowing and a scaling down of the fast-track growth that had spurred the economy of the irrigated counties.

"By 1960, much of the rapid development of irrigation was over, and a period of consolidation and slower growth began," says Holmes. "In the ensuing years (1959-78), the value of farm products sold increased about 60 percent, compared with a tenfold increase in the previous period."

Falling water levels first became a factor during this time, with the number of irrigated farms—and the total acres of cropland irrigated—both falling. By 1978, almost 2,400 operators of irrigated farms had gone out of business, and some 140,000 acres of cropland had been withdrawn from irrigation. The average size of irrigated farms also increased from 320 to 480 acres as farmers enlarged their operations in an apparent effort to reduce costs through economies of scale.

"These adjustments produced much slower growth in farm income, 37 percent compared with a nearly tenfold increase in the previous period," says Holmes, "and had a major impact on farm production patterns and the mix of farm products sold in the irrigated area."

In 1959, cotton accounted for 48 percent of all farm product sales. By 1978, cattle and calves made up 63 percent of total sales—nearly four times the value of cotton—and corn had replaced wheat as the major grain of the area.

"The slowdown in the expansion of the irrigated farm economy carried over to the local nonfarm economy," says Holmes. "Employment increases were very modest, particularly when compared to the previous 19-year period, and total population fell for the first time since the Depression, decreasing about 4 percent."

Things were still much worse in the dryland counties, which did not even have the slow growth of their irrigation neighbors.

"The performance of the dryland farming economy from 1959 to 1978 continued to deteriorate in a manner similar to that which occurred in the previous 19 years," says Holmes. "Population declined by more than a fourth, total employment dropped more than a tenth, and 31 percent of the farm operators went out of business."

Stress of the Early 1980's

In the 1980's, the situation deteriorated for farmers in the irrigated counties, and for farmers across the country.

"These years were extremely stressful for the farm economy," says Holmes. "During this period, U.S. agriculture and the West Texas farm economy went into a tailspin as worldwide recession and the dollar's rise in value reduced the export demand for U.S. farm commodities. On the cost side, prices paid by farmers for inputs began to exceed the prices they received for farm products."

In addition, farmers in the irrigated area had to cope with the now-serious problem of declining water levels in the Ogallala Aquifer and increased energy costs for pumping water. The average annual cost of energy per farm in the irrigated area increased some $13,500 between 1978 and 1982. The comparable energy bill increase in the dryland farming area was less than half, about $5,700.

"These developments made some marginally productive land and irrigation systems uneconomical to operate. In many cases, the only recourse for the farm operator was to return the land to what it originally was, dryland with limited uses," says Holmes.

He adds that the effects of deteriorating conditions in U.S. agriculture and the curtailment of local irrigation are shown in the value of farm product sales. Between 1978 and 1984, the total value of farm products sold dropped 4 percent in the irrigated area, while they increased only about 10 percent in the dryland farming area.

"The downturn in the farm economy appears to have had a marked impact on the well-being of the nonfarm sector in the irrigated counties," says Holmes. "From 1978 to 1984, population in the area declined about 3 percent, and total employment decreased for the first time since the Great Depression."

The trends were much different in the dryland counties.

"Farm income increased 22 percent in the dryland counties, compared with an 18-percent decline in the irrigated area, for two reasons," says Holmes. "First, the proportion of total farm sales from wheat in the dryland area tripled from 1978 to 1984 because of government price support programs. And then there was the difference in costs of production between an irrigated farm and a dryland farm. Energy costs on an irrigated farm were more than double those of a dryland farm."

In fact, per capita income was higher in 1984 in the dryland counties than it had ever been in the irrigated counties. Unfortunately, that reflected another sobering fact. The long decades of decline in the dryland counties had brought a "bottoming-out" in terms of resource use.

"So many people have left that the economy has finally stabilized, and most of those who remain are those with the jobs that are still available."

Although the farm economy appears to be pulling out of recession, the outlook for the irrigated counties is tempered by the difficult adjustments that lie ahead. The economists, however, remain reasonably optimistic.

The irrigation development of the past, they say, left an impressive legacy, including a fairly large population base and diversified employment opportunities. As a result, the end of the irrigation era is not expected to mean the end of farming or a viable rural economy in the irrigated counties.

These findings, Holmes says, may have broader implications for other parts of the West where water is becoming increasingly scarce and expensive.

"One of the enduring traits of the western farmer and rancher has been the ability to adjust to change. The economic adjustments to dryland farming will hurt some farmers and some communities, but they will make the necessary changes. In many cases, the economic benefits of past irrigation development will prove to be an asset rather than a liability," he maintains. □

[Based primarily on information provided by economists Wendell Holmes and Mindy Petrulis of the Agriculture and Rural Economy Division, Economic Research Service.]

Farm Population Down to 2 Percent

The number of Americans living on farms continues to decline. The latest figures reported by USDA's Economic Research Service and the Commerce Department's Census Bureau show that the number dropped to 5 million in 1987. The decline has averaged 2.5 percent annually since 1961.

Today, only about 2 percent of the population, or roughly 1 out of every 49 Americans, lives on a farm.

A century ago, the figure was around 40 percent. In 1880, an estimated 21.9 million Americans lived on farms. The number peaked in 1916 at 32.5 million and has declined almost steadily since then.

"The South was the only geographic region to experience a loss in the number of farm residents over the last couple of years," says ERS researcher Judith Kalbacher. In 1985, it had 1.72 million. In 1987, the figure had dropped to 1.43 million, a 16.9-percent decline.

The Midwest had 2.53 million, or 50 percent, of the nation's farm residents in 1987. This number has not changed significantly since 1985 despite hard times in that region. Analysts say that Midwestern families may be more likely to stay on the farm because of limited opportunities for employment outside of agriculture.

The West and the Northeast also showed no significant changes from 1985 to 1987. The West had around 15 percent of the nation's farm population and the Northeast 6 percent.

Data from earlier years (not yet available for 1987) reveal other characteristics about the farm population. For example, the overwhelming majority of farm residents are white—97 percent in 1986. Of nonfarm residents, 85 percent were white. About 2 percent of the farm population was black and 2 percent Hispanic (including some whites and some blacks). Of the nonfarm residents, 12 percent were black and 8 percent Hispanic.

The median age of farm residents was 37, compared with 31.6 for nonfarm residents. In fact, farm residents were older than the rural population in general by 4.6 years. In 1920, when data on the farm population were first collected, the median age for farm residents was 20.7 years, 16.3 years younger than in 1986.

More farm than nonfarm men and women were married and living with their spouses in 1986—about 72 percent of farm women and 66 percent of farm men. The nonfarm figures were 53 percent of women and 58 percent of men.

Farm households in 1986 made up 2 percent of the nation's total households. About 87 percent of the farm households were families—that is, they contained two or more related persons. The comparable proportion of nonfarm families was 72 percent. The average farm family contained 3.2 members, about the same as nonfarm families.

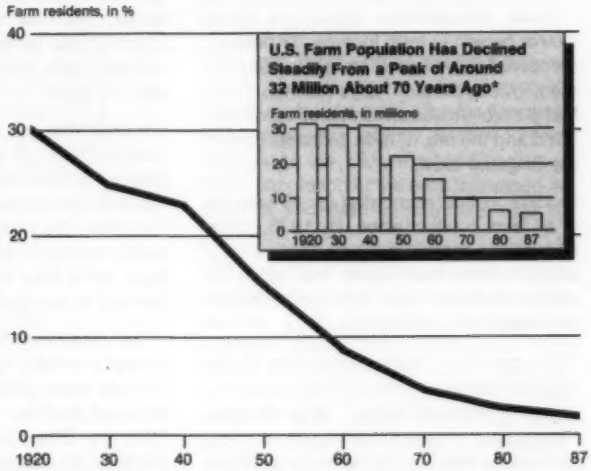
About 69 percent of farm residents age 15 and over were in the labor force in 1986, compared with 64 percent of nonfarm

Farm Population Statistics Reveal Distinct Demographic, Geographic, and Economic Characteristics

	Population	
	Farm	Nonfarm
1987 data		
Number of residents, in thousands (000)	4,986	238,263
Percent by region:[1]		
Northeast	6.1%	21.2%
Midwest	50.7%	24.1%
South	28.7%	34.4%
West	14.5%	20.3%
1986 data		
Median age	37.0	31.6
Percent who are age 50 or older	33.4%	25.4%
Average family size	3.18	3.21
Percent of women who are married and living with spouse[2]	71.7%	53.3%
Percent by race:		
White	97.2%	84.6%
Black	2.1%	12.3%
Other	0.7%	3.1%
Percent of men in labor force[3]	82.4%	74.9%
Percent of women in labor force[3]	53.5%	54.6%
Percent unemployed, both sexes	3.0%	7.2%
1986 data		
Median family income	$21,853	$27,881
Percent of families with incomes below poverty level	17.0%	11.2%

[1] Nonfarm percentages are for 1986. Data for 1987 are not yet available. The farm population percentages shown for 1987 were about the same in 1986. [2]For women age 15 and older. [3]Includes those 15 years and older who are working, serving in the armed forces, or unemployed and looking for work.

The Proportion of Farm Residents in the U.S. Population Has Fallen From About 30% to 2% Since 1920*



*Since 1980, a farm has been defined as a rural place from which at least $1,000 in agricultural products is sold annually. Previously, the definition was a place of less than 10 acres from which at least $250 in farm products was sold annually or a place of 10 acres or more from which annual sales totaled at least $50.

residents. In every age group except 35-44, the proportion of farm men in the labor force was significantly higher than that of nonfarm men. However, about the same proportion of farm women and nonfarm women were in the labor force in all age categories. Only 3 percent of the farm residents in the labor force were unemployed in 1986, compared with 7.2 percent of nonfarm residents.

Farm men most often worked in agricultural jobs, and most farm operators and managers (72 percent) were farm residents. Farm women mostly worked in nonagricultural jobs, primarily services.

More of the South's farm residents (62 percent) worked in nonfarm occupations than the Midwest's (48 percent).

The median income in 1985 for farm families was 78 percent of the level for nonfarm families—$21,853 compared with $27,881. About 17 percent of the farm families were below the poverty level. The poverty rate for all farm residents was 20 percent, considerably higher than the 14-percent rate for nonfarm residents. "The general trend is for farm household and family income to be lower," says Kalbacher.

Self-Help Works For Ailing Areas

The decade of the 1970's was the most prosperous in the history of rural America, but the tremendous growth and rising expectations of that time have suffered a serious reversal in the 1980's.

Rural America now faces a challenging future that will demand innovative economic development policies and self-help strategies.

"To summarize, what's going on is very difficult economic adjustment," says Ken Deavers, an economist with USDA's Economic Research Service. "In terms of rural economic development, you can't use what you did in the 1970's as a model for what you're going to do in the 1980's. Therefore, I think that the rural economic adjustment to the new set of realities, both domestically and internationally, is going to be very difficult."

During the 1970's, the rural South became the nation's manufacturing center for textiles, apparel, wood products, and shoes. In the West, mining, gas, and oil production were booming. There was an unprecedented boom in farming, and rapid growth in the service sector. Several million people moved from urban areas to rural America.

In the 1980's, however, rural manufacturing has declined as international markets have weakened and as Third World countries have stepped up the competition for low-wage, low-skill jobs. Energy industries slipped into recession as a world oil glut sent prices spiraling downward. The result, according to Deavers, is that "job growth in all of those industries is now very slow, or in fact there has been net job loss."

Here's a profile of rural America today: the average unemployment rate is more than 9 percent, well above the national average. People are moving away—in 1986 more than half of all rural and small-town counties declined in population. The tax base in rural communities is shrinking, which means that local services—school, fire department, water treatment, police—all suffer. Rural America is not primarily agricultural, and its economic future is more tightly linked with national and international developments.

In short, small towns across rural America are fighting problems of unemployment, inadequate services, and financial stress. "Rural America is facing major economic adjustment as small towns search for ways to create employment opportunities and revitalize their economies," says Deavers.

That process of revitalization is already under way in many communities, according to "Your Hometown," a one-hour video documentary airing on public television stations across the nation. The documentary, produced for the Economic Research Service, offers an educational look at how three rural communities have approached economic development.

In a small Utah town, where the county unemployment rate is 22 percent, a young woman started a candy business that now employs as many as 24 local women. In Nebraska, some dedicated professional counselors are helping farmers find other careers after they are forced to leave the farm. In Hartwell, Georgia, the people are turning their economically troubled town into a budding tourist attraction, centered around a lake and a train ride through the Georgia countryside.

These are but a few examples of the self-help, revitalization strategies that can be found in communities throughout rural America, says Deavers, who is also featured in the documentary.

"Solving their own problems has got to be the basic strategy that rural communities follow," the economist says. "Developing opportunities that provide solutions to the problems has to come from within, not from outside the community."

Video-Cassettes Are Now Available

Narrated by James Whitmore, "Your Hometown" is an informative and entertaining look at some remarkable people in small town America. The one-hour program explores the economic challenges facing rural communities, and illustrates how they are dealing with their economic woes.

To order a video-cassette, use the attached form. For further information, call Dave Carter at (202) 786-1494.

Return to: Dave Carter, USDA, Room 228-E
1301 New York Avenue NW
Washington, DC 20005-4789

Video-cassettes of "YOUR HOMETOWN." Price: VHS—$10, 3/4-inch—$30. Checks only please (no purchase orders) made payable to: USDA/ERS.

Name _____

Address _____

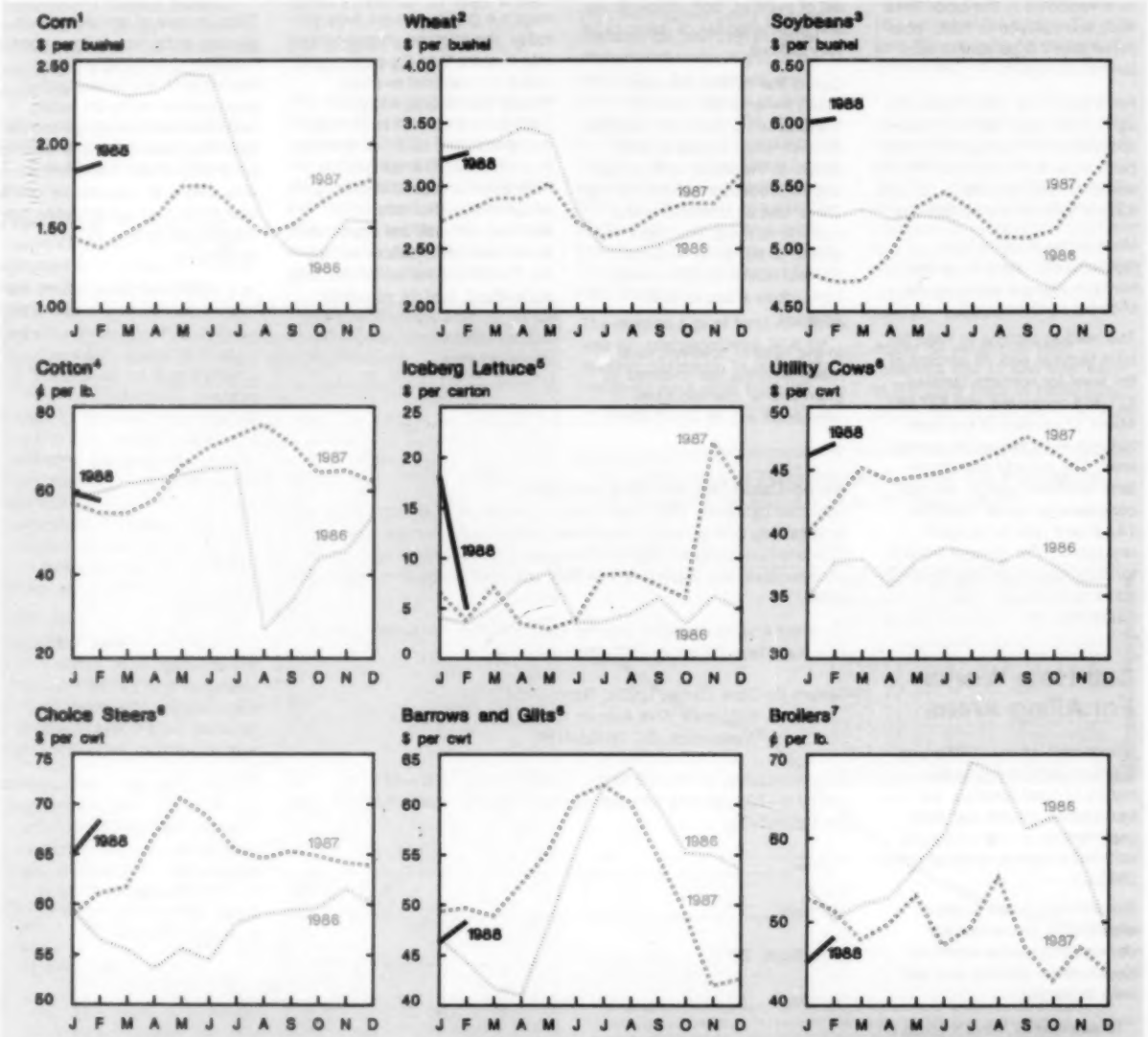
City, State, ZIP _____

Telephone ( ) _____

Check one only: VHS [ ] 3/4-inch [ ]

Monthly Price Monitor

USDA's February 1988 index of farm prices declined nearly 1% from January but was 6.3% above its year-earlier level. Corn, at $1.89 per bushel, was up 5¢ from January. Wheat rose 6¢ to $3.27, the highest wheat price since May 1986. Soybeans gained 3¢ per bushel to $6.04, the highest since November 1984, while cotton declined 2¢ to 57.8¢ per lb., its lowest price since April 1987. Lettuce, after 3 months of $17–$22 prices, settled back down to $4.98 per carton. Among meat animals, utility cows were up $1 to $47.16 per cwt. Choice steers gained more than $3 to $68.35, the highest since last June. Barrows and gilts were up $2 to $48.36, and broilers rose 3¢ to 48.2¢ per lb. All prices shown are monthly averages.



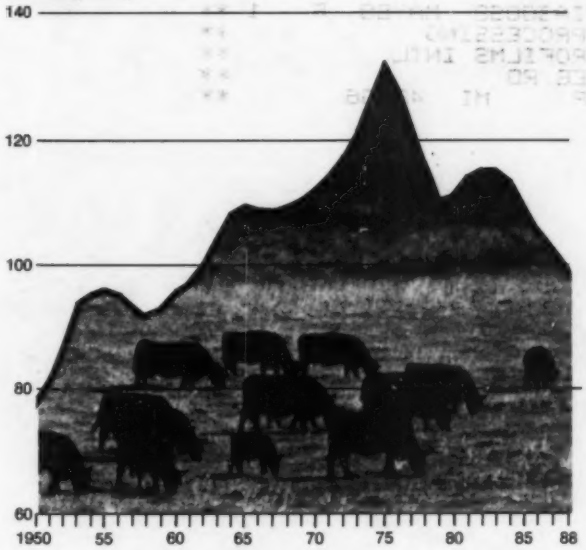
[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16", spot market price. [5]Standard carton 24's, California–Arizona. [6]Omaha. [7]Wholesale, New York.

Counting Cattle

The Liquidation Phase of the Cattle Cycle Continues

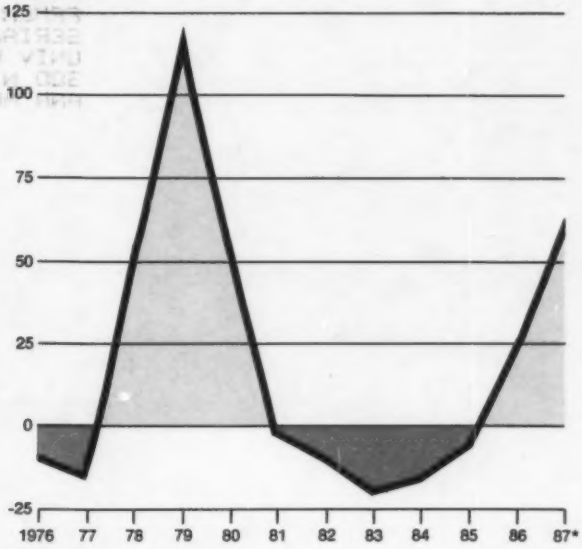
In the Sixth Straight Year of Herd Reduction, Cattle Numbers Have Fallen Below 100 Million Head for the First Time Since 1961

U.S. cattle numbers, Jan. 1, in millions (000,000)



Although Net Returns Turned Positive in 1986, the Current Sell-Off Still Reflects the Losses Suffered in 1981-85

Net returns (receipts minus cash expenses), in dollars per cow



*Estimated.

In the Latest Count, Cattle Numbers Were Down 3% Nationwide and 2% in the Fifteen States with the Largest Herds

	January 1		Change from
	1987	1988	1987 to 1988
	thousand head		percent
Texas	13,400	13,500	+1%
Kansas	5,920	5,860	-1%
Nebraska	5,500	5,450	-1%
Oklahoma	5,200	5,050	-3%
California	4,750	4,600	-3%
Iowa	4,650	4,600	-1%
Missouri	4,600	4,250	-8%
Wisconsin	4,260	4,230	-1%
South Dakota	3,600	3,500	-3%
Minnesota	3,150	2,850	-10%
Colorado	2,600	2,700	+4%
Kentucky	2,450	2,450	0%
Montana	2,400	2,350	-2%
Tennessee	2,400	2,300	-4%
Illinois	2,250	2,050	-9%
15-state total	67,130	65,740	-2%
U.S. total	102,000	98,994	-3%

Altogether, Forty States Registered Declines

Cattle numbers by state, Jan. 1, 1988, in thousands (000):

States where cattle numbers:

- ☐ increased
- ■ decreased
- ☐ remained the same

between Jan. 1, 1987, and Jan. 1, 1988.

Data provided by economist Steve Reed of the Economic Research Service and statisticians of the National Agricultural Statistics Service.

United States
Department of Agriculture
Washington, DC 20005-4789

OFFICIAL BUSINESS
Penalty for Private Use, $300

BULK RATE
POSTAGE & FEES PAID
U.S. Dept. of Agriculture
Permit No. G-145

To stop mailing [ ] or to change your address [ ] send mailing label on this magazine and new address to *FARMLINE*, Rm. 228-USDA, 1301 New York Ave. NW, Washington, DC 20005-4789.

FRMLNSERIA300SB MAY88 R 1 **
SERIALS PROCESSING **
UNIV MICROFILMS INTL **
300 N ZEEB RD **
ANN ARBOR MI 48106 **

Subscribe today! Call ERS's NEW customer service number:

301–953–2515

To get the *whole* picture you need *all* the facts...

Order these Economic Research Service periodicals:

Farmline. Written for farmers, farm-related businesses, and others in agriculture. Its concise, fact filled articles are designed to help you understand the economic environment in which you operate, how that environment is changing, and the causes and consequences of those changes.

National Food Review. Offers the latest developments in food prices, product safety, nutrition programs, consumption patterns, marketing, and processing technology for those who manage, monitor, or depend on the Nation's food system.

Rural Development Perspectives. Presents results and implications of new rural research. Shows the practical application of research in rural banking, aging, housing, the labor force and poverty, and farming policies' impact on rural areas.

How to order

For fast, personal customer service call 301-953-2515 and order *today* or complete the form and return to ERS.

*Order **now** by calling 301—953—2515*

Please mark the appropriate boxes with the number of subscriptions for each publication you wish to order.

	Publication	Domestic	Outside U.S.
☐	Farmline 11 issues	$11.00	$13.75
☐	National Food Review 4 issues	$10.00	$12.50
☐	Rural Development Perspectives—3 issues	$ 9.00	$11.25

Mail your check or money order payable to USDA/ERS to: **USDA/ERS**
P.O. Box 1608
Rockville, MD 20850

☐ Enclosed is my check or money order for $ _____ (total).
☐ Please bill me.

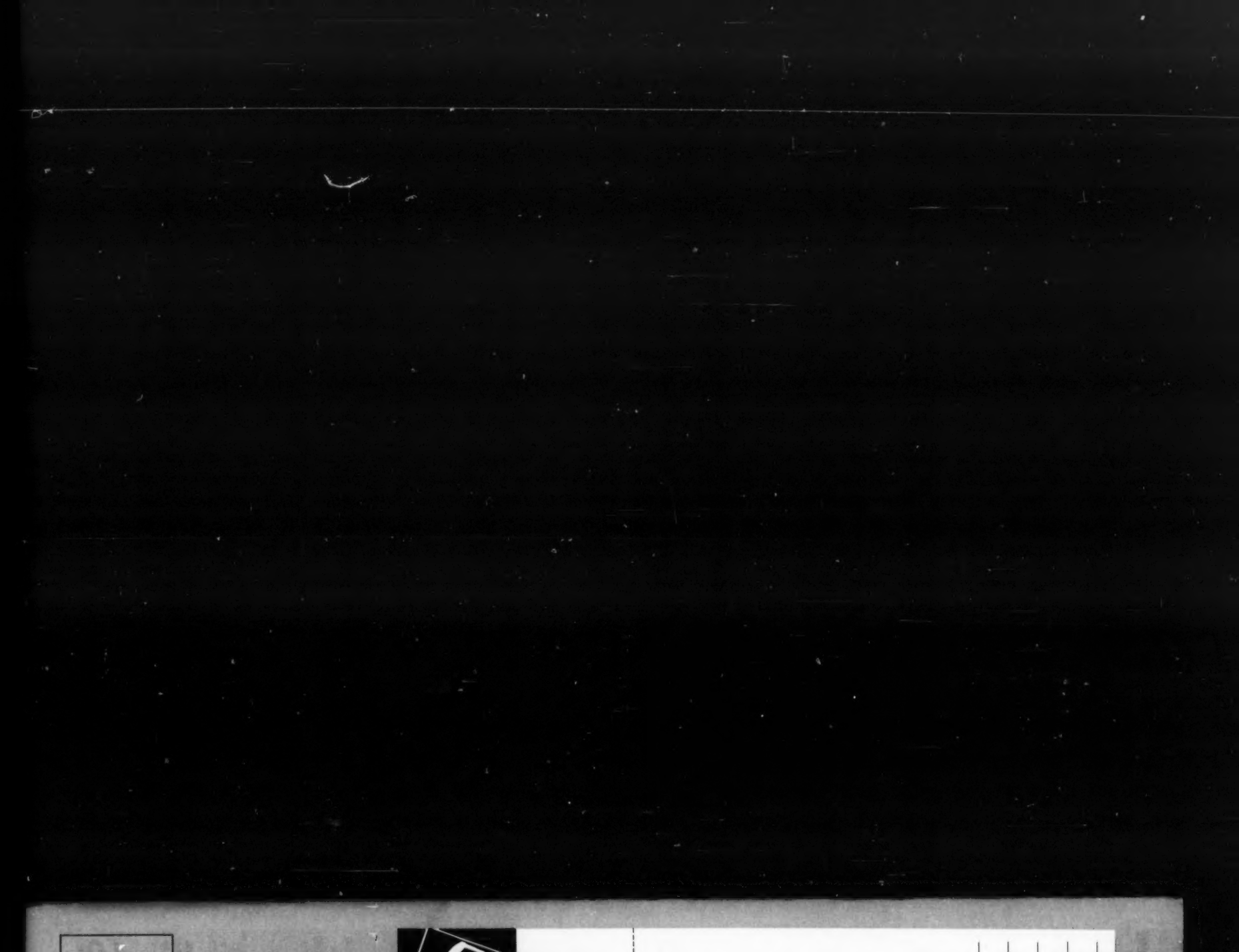
Note: Only checks drawn on U.S. banks, cashier's checks, or international money orders accepted.

Please print or type:

Name _____ Title _____

Company or organization _____

Street address or P.O. Box _____

City, State, ZIP _____

Daytime telephone no. ( ) _____